

S/N 10/602,315



PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant:	Kie Y. Ahn et al.	Examiner:	Asok K Sarkar
Serial No.:	10/602,315	Group Art Unit:	2829
Filed:	June 24, 2003	Docket:	1303.107US1
Title:	LANTHANIDE OXIDE / HAFNIUM OXIDE DIELECTRICS		

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**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

MS RCE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Supplemental Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 19-0743 in order to have this Supplemental Information Disclosure Statement considered.

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Serial No :10/602,315

Filing Date: June 24, 2003

Title: LANTHANIDE OXIDE / HAFNIUM OXIDE DIELECTRICS

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The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published Applications are no longer required to be provided to the Office. Notification of this change was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004. Thus, Applicant has not included copies of any US Patents or Published Applications cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

Respectfully submitted,

KIE Y. AHN ET AL.

By their Representatives,

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Date 9 MARCH 2005

By

David R. Cochran  
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Reg. No. 46,632

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 10 day of March, 2005.

Name

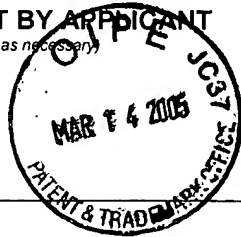
KACIA LEE

Signature

Kacia Lee

Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
(Use as many sheets as necessary)



Complete if Known

Application Number	10/602,315
Filing Date	June 24, 2003
First Named Inventor	Ahn, Kie
Group Art Unit	2829
Examiner Name	Sarkar, Asok

Sheet 1 of 1

Attorney Docket No: 1303.107US1

**US PATENT DOCUMENTS**

Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Filing Date If Appropriate
	US-2004/0144980-A1	07/29/2004	Ahn, Kie Y., et al.	01/29/2003
	US-2005/0020017-A1	01/27/2005	Ahn, K. Y., et al.	06/24/2003
	US-3,357,961	12/12/1967	Makowski, H. S., et al.	05/24/1965
	US-5,572,052	11/05/1996	Kashihara, K., et al.	01/19/1995
	US-6,632,279	10/14/2003	Ritala, M., et al.	10/13/2000
	US-6,674,138	01/06/2004	Halliyal, A., et al.	12/31/2001
	US-6,699,747	03/02/2004	Ruff, Alexander, et al.	11/18/2002
	US-6,831,315	12/14/2004	Raaijmakers, Ivo, et al.	02/22/2001

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	T <sup>2</sup>
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**OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
		CHIN, A., et al., "High Quality La <sub>2</sub> O <sub>3</sub> and Al <sub>2</sub> O <sub>3</sub> Gate Dielectrics with Equivalent Oxide Thickness 5-10A", <u>Digest of Technical Papers. 2000 Symposium on VLSI Technology, 2000, Honolulu, (June 13-15, 2000), 16-17</u>	
		COPEL, M., et al., "Formation of a stratified lanthanum silicate dielectric by reaction with Si(001)", <u>Applied Physics Letters, 78(11), (March 12, 2001), 1607-1609</u>	
		DIMOULAS, A., et al., "Structural and electrical quality of the high-k dielectric Y <sub>2</sub> O <sub>3</sub> on Si (001): Dependence on growth parameters", <u>Journal of Applied Physics, 92(1), (July 1, 2002), 426-431</u>	
		GUHA, S., et al., "Atomic beam deposition of lanthanum-and yttrium-based oxide thin films for gate dielectrics", <u>Applied Physics Letters, 77, (2000), 2710-2712</u>	
		HUANG, C. H., et al., "La/sub 2/O/sub 3/Si/sub 0.3/Ge/sub 0.7/ p-MOSFETs with high hole mobility and good device characteristics", <u>IEEE Electron Device Letters, 23(12), (December 2002), 710-712</u>	
		IWAI, H., et al., "Advanced gate dielectric materials for sub-100 nm CMOS", <u>International Electron Devices Meeting, 2002. IEDM '02. Digest., (December 8-11, 2002), 625-628</u>	
		MARIA, J. P., et al., "High temperature stability in lanthanum and zirconia-based gate dielectrics", <u>Journal of Applied Physics, 90(7), (Oct. 1, 2001), 3476-3482</u>	
		MICHAELSON, HERBERT B., "The work function of the elements and its periodicity", <u>Journal of Applied Physics, 48(11), (November 1977), 4729-4733</u>	
		YAMADA, HIROTOSHI, et al., "MOCVD of High-Dielectric-Constant Lanthanum Oxide Thin Films", <u>Journal of The Electrochemical Society, 150(8), (August 2003), G429-G435</u>	

EXAMINER

DATE CONSIDERED